to show that preformed extranuclear cell structure (i.e. the cytoplasm) has autonomy and plays an essential part in cell heredity. The significance of this finding in relation to the influence of environment on the evolution of inborn qualities of a species is not discussed.

The last three papers show ways in which molecular diversification may be modified by cellular interactions and cellular products, during cellular differentiation and morphogenesis in bird and mammalian embryos and experimental organisms (including tissue and organ cultures, fruit flies and silk worms).

This volume is recommended to all who wish to learn more about several aspects of the recent status of our knowledge concerning the fundamental nature of biological variation.

D. T. HUGHES

Carson, Hampton L. *Heredity and Human Life.* New York and London, 1963. Columbia University Press. Pp. 218. Price 37s. 6d.

IN THIS SCIENTIFIC age, it is rather sad to reflect that our children are still conscientiously taught outdatedly-oriented religion but hardly a scrap of human biology. Whether we like it or not, the former still contributes much to "emotional" and uncritical thinking, whereas the latter offers to provide a balanced account of the scientific basis of human variation, aspirations and dignity. Professor Carson clearly had this modern dilemma in mind when preparing this introductory book, and indeed points out that it is likely to be most useful to teachers, social workers and ministers. In this it fully accomplishes what it sets out to do and, moreover, its easy style should be appealing also to the general reader.

Logically, he begins with a detailed description —down to molecular level—of human hereditary material, its stability, and the type of "information" it controls. He makes it clear that even with our present limited knowledge, there is no longer need to postulate "some elusive, non-material vital principle", a statement which may cause some heart-searching among the more religious readers.

Although animal data is called upon at times, human genetic examples are given whenever suitable. Following sections consider combinations and recombinations of genes, and the nature-nurture problem. The latter includes a good summary of the value of twin studies. As regards cerebral abilities, he points out that biological variability extends into the field of mental performance, which should be remembered when designing educational "moulds". From the individual, Carson moves to the position of the individual in his group, and the affect on the gene pool of inbreeding and isolation or outbreeding.

Considering the wealth of data now available on fossil man, it is no small task to condense this into a brief intelligible survey. This is done very well in Chapter 7, although one or two questionable statements are made. For example, he states that the 1961 Olduvai Gorge immature individual was a "twelve-year-old boy"—a most dubious fact. The "prominent chin" of the Kanam jaw is now well known to be the result of a tumour. Again, he mentions "one" skull from Kanjera and one from Fontechevade, when in actual fact there were remains of four and two respectively. Incidentally, it is a pity in some ways that he employed, both in figures and text, the idea of "lines" of descent. In actual fact there has obviously been a complex "mesh" or "mosaic" of population change, and I think it is important to emphasize this even in introductory works.

The final part of the book is mainly concerned with race formation, the evolutionary factors involved, and with putting the genetic differences between modern peoples into proper perspective. The last chapters are particularly valuable in that they state in simple terms the "fundamental similarity" of human groups. It is inevitable and right that he should also debate the population explosion and eugenics.

In sum, Carson has produced a concise, readable, suitably illustrated, introductory work, quite suitable for schools and adult educationalists.

DON BROTHWELL

ANTHROPOLOGY

Coon, Carleton S. *The Origin of Races.* London, 1963. Cape. Pp. xli + 724 + xxi. Price 63s.

IN THIS BOOK Professor Coon sets out to investigate the theory, first advanced by Weidenreich,